

Botanical interest of Crosby Sand-dunes, Merseyside

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Introduction

Crosby Sand-dunes consists of a strip of mainly mobile and semi-fixed dunes extending south from Crosby Baths (SJ 305 988) to the boundary of the Liverpool Freeport (SJ 313 973), a distance of 1630m. The dune strip ranges from 50 to 80m in width and covers an area of about 8.5ha on the western edge of Crosby Marine Park. These sand-dunes have formed since a major reclamation to create the Seaforth Dock and Crosby Marina complex took place in the late 1960s. Their sand-supply comes from the broad expanse of Crosby beach and has been sufficient to create a ridge with a height of up to 11m O.D. east of, and adjacent to, the promenade. An additional dune ridge about 800m long, with an area of about 2.2ha, has formed in recent years on the foreshore west of the promenade and it can be anticipated that this will, in due course, intercept sand-blow onto the older dunes.

About half-way along the main dune strip (at SJ 311 981) a new pumping station was built in 1995/96. Its construction necessitated some reprofiling and reseeded of the dunes at this point.

Part of the Crosby Sand-dunes seems to be under some threat because certain local residents have requested a lowering of the ridge so that they can view the sea from their properties. As the dunes form part of a Site of Local Biological Interest (SLBI), designated partly on botanical grounds by Sefton MBC, it was felt appropriate to conduct a detailed botanical survey. This report describes the methods used and the results obtained during the study.

Methods

The site was visited six times in May, June, July and August 2005. An arbitrary boundary was set on the inland side of the dune ridge between duneland and the managed grassland of the Marine Park. All vascular plants found within the study area were identified, their relative abundance being assessed on the DAFOR scale. Nomenclature follows the *New Flora of the British Isles* (Stace, 1997). Notes were made on dune topography, land-use and habitat condition. Relevant information was also extracted from the Sefton Coast Geographic Information System (GIS).

Results

1. Topography & habitats

Most of the study area consists of undulating mobile (yellow) dunes dominated by Lyme-grass (*Leymus arenarius*), Marram (*Ammophila arenaria*) and Sand Couch (*Elytrigia juncea*). In several places, there is an abundance of Sea Holly (*Eryngium maritimum*) and Sea Spurge (*Euphorbia paralias*). On the east side of the main ridge, the back-slope, with a gradient of about 30 – 45°, consists of semi-fixed dunes with a high plant species-richness, including a great many rosette-forming composites and plantains. Similar vegetation occurs on an area of low, undulating semi-fixed dunes which extends for about 400m south from Crosby Baths, to the east of the main ridge. This habitat is maintained by moderate trampling, rabbit-grazing and a rain of blown sand from the mobile dunes and foreshore. Frequent sandy footpaths run east-west through the main dune ridge but blow-out development is quite limited, indicating that public pressure is not excessive.

The new ridge on the foreshore is steep-sided and susceptible to trampling damage. It is currently quite unstable with vegetation (mainly Lyme-grass) largely confined to the crest.

Typical fixed (grey) dune vegetation is confined to two mounds north and south of the pumping station, which were reprofiled during its construction. The mounds have a characteristic fixed dune flora but also support a number of alien plants, such as Hard Fescue (*Festuca brevipila*), Lucerne (*Medicago sativa*), White Melilot (*Melilotus albus*) and a forage form of Bird's-foot-trefoil (*Lotus corniculatus* var. *sativus*), these having presumably been included in a seed-mixture used for stabilisation. The southernmost section of the dune ridge, from the Marina sluice to the Free-port boundary, has also been reprofiled in the past to produce a plateau-like area of heavily rabbit-grazed semi-fixed dunes with patches of Marram.

North of the sluice are several large clumps of Sea Buckthorn (*Hippophae rhamnoides*). Otherwise, the dune-scrub habitat is restricted to a few isolated willow (*Salix*) bushes and a small amount of introduced Tree Lupin (*Lupinus arboreus*).

A narrow zone adjacent to the Marina, mainly just north of the sluice, is damp enough to support wetland plants, such as marsh-orchids (*Dactylorhiza*), Marsh Arrow-grass (*Triglochin palustre*) and Great Willowherb (*Epilobium hirsutum*).

2. Vascular Plants

A total of 141 vascular taxa was identified (Appendix 1). Only 31 (22%) of these are non-native or introduced native plants. This is a relatively small proportion, as the Sefton Coast sand-dune system as a whole supports about 33% alien taxa (Smith 2005).

Nine “notable” plants were recorded (Table 1), one Nationally Rare (NR), two Nationally Scarce (NS) and six Species of Conservation Importance in North West England (SCI) (Regional Biodiversity Steering Group 1999).

The Nationally Rare species is Field Wormwood (*Artemisia campestris*), a single flourishing specimen of which was found at SJ 311 982. This was identified by the BSBI Referee, Eric Clement, as *A. campestris* ssp. *maritima*, new to Britain, as opposed to the native ssp. *campestris* which is known from Breckland. The origin of this plant is a mystery but it could have arrived in seed mixtures used on the adjacent pumping station mounds.

Nearby, is one of the Nationally Scarce species, Dense Silky-bent (*Apera interrupta*), an annual grass which occurs predominantly in eastern England, particularly East Anglia. It may have the same origin as the Field Wormwood. The other Nationally Scarce plant is Isle of Man Cabbage (*Coincya monensis* ssp. *monensis*), a British endemic included in the UK Biodiversity Action Plan as a Priority Species.. This was planted in the vicinity of SJ 305 993 in 1992 as part of a rescue operation to save the long-established Blundellsands colony which was about to be destroyed by development. The translocated population has been monitored regularly and has grown steadily, reaching a total of 612 plants by June 2005 (Smith in press).

The SCIs (Table 1) include Sea Holly (*Eryngium maritimum*) and Sea Spurge (*Euphorbia paralias*), both of which have very large populations on the mobile dunes and semi-fixed back slope of the main ridge. Also interesting are the large populations of Evening-primroses (*Oenothera*), which include the now very scarce Common Evening-primrose (*O. biennis*) and Small-flowered Evening-primrose (*O. cambrica*), the latter being previously known on the Sefton Coast only from Seaforth Nature Reserve.

Assessment

Crosby Sand-dunes form part of the Crosby Marine Lake, Park and Shore Site of Local Biological Interest (SLBI) designated on botanical and ornithological grounds by Sefton MBC in 2000. The study area forms a relatively small proportion of the SLBI but supports 83% of its vascular plants (141 out of a total of 170 recorded). The fact that one Nationally Rare, two Nationally Scarce (one of which is a UK BAP Priority Species) and six Species of Conservation Importance in North West England have been recorded during this study also confers high botanical interest.

All coastal sand-dune habitats are listed on Annex 1 of the EU Habitats Directive, with fixed (grey) dunes afforded Priority Status. While much of the Sefton Coast sand-dune system is presently considered to be in unfavourable or unfavourable-recovering condition, the Crosby Sand-dunes probably qualify for favourable condition status, due to their immaturity, relative mobility, lack of scrub and high plant species-richness.

Management

Currently, this dune area is in a remarkably good state and requires little active management. Sea Buckthorn scrub seems to be slowly increasing and control of this invasive species, as elsewhere along the coast, can probably be justified. Its removal from the low-lying area adjacent to the Marina would open up a potentially valuable habitat for plants such as marsh-orchids. The present level of public use seems appropriate to the maintenance of dune habitats. Monitoring of sand-blow will show if any control of public pressure is required in the future.

Acknowledgements

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References

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Smith, P.H. (in press). Successful translocation of Isle of Man Cabbage on the Sefton Coast, Merseyside. BSBI News.

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Table 1. Notable vascular plants on Crosby Sand-dunes

Taxon	English name	NR	NS	SCI
<i>Apera interrupta</i>	Dense Silky-bent		+	
<i>Artemisia campestris maritima</i>	Field Wormwood	+		
<i>Blackstonia perfoliata</i>	Yellow-wort			+
<i>Coincya monensis monensis</i>	Isle of Man Cabbage		+	
<i>Eryngium maritimum</i>	Sea Holly			+
<i>Euphorbia paralias</i>	Sea Spurge			+
<i>Myosotis ramosissima</i>	Early Forget-me-not			+
<i>Phleum arenarium</i>	Sand Cat's-tail			+
<i>Triglochin palustre</i>	Marsh Arrow-grass			+

NR = Nationally Rare; NS = Nationally Scarce; SCI = Species of Conservation Importance in North West England.

APPENDIX 1. CROSBY SAND-DUNES VASCULAR PLANT LIST 2005

* = non-native / introduced taxon

Taxon	Vernacular name	Frequency	Notable
<i>Acer pseudoplatanus</i>	Sycamore	r	
<i>Achillea millefolium</i>	Yarrow	o	
<i>Agrostis capillaris</i>	Common Bent	o	
<i>Agrostis stolonifera</i>	Creeping Bent	lf	
<i>Aira caryophyllea</i>	Silver Hair-grass	a	
<i>Aira praecox</i>	Early Hair-grass	la	
<i>Alnus incana</i> *	Grey Alder	r	
<i>Ammophila arenaria</i>	Marram	a	
<i>Anisantha sterilis</i>	Barren Brome	vlf	
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	o	
<i>Anthyllis vulneraria</i>	Kidney Vetch	la	
<i>Apera interrupta</i> *	Dense Silky-bent	vlf	NS
<i>Aquilegia vulgaris</i> *	Columbine	r	
<i>Arctium minus</i>	Lesser Burdock	r	
<i>Armoracia rusticana</i> *	Horse-radish	r	
<i>Artemisia absinthium</i>	Wormwood	r	
<i>Artemisia campestris</i> ssp. <i>maritima</i> *	Field Wormwood	r	NR
<i>Artemisia vulgaris</i>	Mugwort	r	
<i>Bellis perennis</i>	Daisy	vlf	
<i>Beta vulgaris</i> ssp. <i>maritima</i>	Sea Beet	r	
<i>Blackstonia perfoliata</i>	Yellow-wort	r	SCI
<i>Brassica napus</i> ssp. <i>oleifera</i> *	Oil-seed Rape	r	
<i>Bromus hordeaceus</i>	Soft Brome	o	
<i>Cakile maritima</i>	Sea Rocket	r	
<i>Carex arenaria</i>	Sand Sedge	f	
<i>Carex otrubae</i>	False Fox-sedge	r	
<i>Centaureum erythraea</i>	Common Centaury	o	
<i>Cerastium fontanum</i>	Common Mouse-ear	lf	
<i>Cerastium semidecandrum</i>	Little Mouse-ear	lf	
<i>Chamerion angustifolium</i>	Rosebay Willowherb	r	
<i>Chenopodium album</i>	Fat-hen	r	
<i>Cirsium arvense</i>	Creeping Thistle	f	
<i>Cirsium vulgare</i>	Spear Thistle	o	
<i>Claytonia perfoliata</i> *	Spring Beauty	vla	
<i>Cochlearia danica</i>	Danish Scurvy-grass	r	
<i>Coincya monensis</i> ssp. <i>monensis</i>	Isle of Man Cabbage	lf	NS
<i>Convallaria majus</i> *	Lily-of-the-valley	r	
<i>Cotoneaster hjelmqvistii</i> *	Hjelmqvist's Cotoneaster	r	
<i>Crepis capillaris</i>	Smooth Hawk's-beard	o	
<i>Dactylis glomerata</i>	Cock's-foot	r	
<i>Dactylorhiza praetermissa</i>	Southern Marsh-orchid	r	
<i>Dactylorhiza x grandis</i>	Hybrid Marsh-orchid	vlo	

<i>Diploaxis muralis</i>	Annual Wall-rocket	r	
<i>Elytrigia juncea</i>	Sand Couch	a	
<i>Elytrigia repens</i>	Common Couch	r	
<i>Epilobium hirsutum</i>	Great Willowherb	r	
<i>Epilobium parviflorum</i>	Hoary Willowherb	vlo	
<i>Equisetum arvense</i>	Field Horsetail	f	
<i>Erophila verna</i>	Common Whitlowgrass	o	
<i>Eryngium maritimum</i>	Sea-holly	lf	SCI
<i>Euphorbia helioscopia</i>	Sun Spurge	r	
<i>Euphorbia paralias</i>	Sea Spurge	lf	SCI
<i>Fallopia convolvulus</i>	Black-bindweed	r	
<i>Festuca brevipila</i> *	Hard Fescue	la	
<i>Festuca ovina</i>	Sheep's Fescue	lf	
<i>Festuca rubra</i>	Red Rescue	a	
<i>Galium aparine</i>	Goose-grass	r	
<i>Geranium molle</i>	Dove's-foot Crane's-bill	o	
<i>Glaux maritima</i>	Sea Milkwort	vla	
<i>Hippophae rhamnoides</i> *	Sea Buckthorn	vla	
<i>Hirschfeldia incana</i> *	Hoary Mustard	lo	
<i>Holcus lanatus</i>	Yorkshire Fog	o	
<i>Honckenya peploides</i>	Sea Sandwort	lf	
<i>Hordeum murinum</i>	Wall Barley	r	
<i>Hyacinthoides hispanica</i> *	Spanish Bluebell	r	
<i>Hyacinthoides x variabilis</i> *	Hybrid Bluebell	r	
<i>Hypochaeris radicata</i>	Cat's-ear	f	
<i>Juncus articulatus</i>	Jointed Rush	vlf	
<i>Juncus conglomeratus</i>	Common Rush	vlo	
<i>Lavandula x intermedia</i> *	Garden Lavender	r	
<i>Leontodon hispidus</i>	Rough Hawkbit	vlf	
<i>Leucanthemum vulgare</i>	Oxeye Daisy	vlf	
<i>Leymus arenarius</i>	Lyme-grass	a	
<i>Lolium perenne</i>	Perennial Rye-grass	o	
<i>Lolium x boucheanum</i>	Hybrid Rye-grass	r	
<i>Lotus corniculatus</i>	Bird's-foot Trefoil	f	
<i>Lupinus arboreus</i> *	Tree Lupin	lo	
<i>Luzula campestris</i>	Field Wood-rush	o	
<i>Luzula multiflora ssp. congesta</i>	Heath Wood-rush	r	
<i>Malva sylvestris</i>	Common Mallow	r	
<i>Matricaria discoidea</i> *	Pineapple-weed	r	
<i>Medicago lupulina</i>	Black Medick	la	
<i>Medicago sativa</i> *	Lucerne	lf	
<i>Melilotus alba</i> *	White Melilot	la	
<i>Melilotus altissimus</i> *	Tall Melilot	r	
<i>Melilotus officinalis</i> *	Ribbed Melilot	r	
<i>Myosotis arvensis</i>	Field Forget-me-not	r	
<i>Myosotis ramosissima</i>	Early Forget-me-not	r	SCI
<i>Oenanthe crocata</i>	Hemlock Water-dropwort	r	
<i>Oenothera biennis</i> *	Common Evening-primrose	lo	

<i>Oenothera cambrica</i> *	Small-flowered Evening-primrose	lf	
<i>Oenothera fallax</i> *	Intermediate Evening-primrose	lf	
<i>Oenothera glazioviana</i> *	Large-flowered Evening-primrose	lf	
<i>Ononis repens</i>	Common Restharrow	r	
<i>Papaver somniferum</i> *	Opium Poppy	r	
<i>Persicaria amphibium</i>	Amphibious Bistort	r	
<i>Phleum arenarium</i>	Sand Cat's-tail	vlf	SCI
<i>Plantago coronopus</i>	Buck's-horn Plantain	lf	
<i>Plantago lanceolata</i>	Ribwort Plantain	f	
<i>Plantago major</i>	Greater Plantain	r	
<i>Poa annua</i>	Annual Meadow-grass	lf	
<i>Poa humilis</i>	Spreading Meadow-grass	o	
<i>Potentilla anserina</i>	Silverweed	lf	
<i>Potentilla reptans</i>	Creeping Cinquefoil	r	
<i>Rosa rugosa</i> *	Japanese Rose	vla	
<i>Rubus caesius</i>	Dewberry	vlf	
<i>Rumex acetosa</i>	Common Sorrel	r	
<i>Rumex acetosella</i>	Sheep's Sorrel	la	
<i>Rumex crispus</i>	Curled Dock	o	
<i>Rumex obtusifolius</i>	Broad-leaved Dock	r	
<i>Rumex x pratensis</i>	Hybrid Dock	o	
<i>Sagina procumbens</i>	Procumbent Pearlwort	o	
<i>Salix cinerea</i>	Grey Willow	r	
<i>Salix viminalis</i>	Osier	r	
<i>Salix x rubens</i> *	Hybrid Crack-willow	r	
<i>Sambucus nigra</i>	Elder	r	
<i>Saponaria officinalis</i> *	Soapwort	r	
<i>Sedum acre</i>	Biting Stone-crop	la	
<i>Senecio jacobaea</i>	Common Ragwort	f	
<i>Senecio squalidus</i> *	Oxford Ragwort	f	
<i>Senecio vulgaris</i>	Groundsel	f	
<i>Silene latifolia</i>	White Campion	r	
<i>Sisymbrium officinale</i>	Hedge Mustard	r	
<i>Sisymbrium orientale</i> *	Eastern Rocket	r	
<i>Solanum dulcamara</i>	Bittersweet	r	
<i>Sonchus oleraceus</i>	Smooth Sow-thistle	o	
<i>Spergularia marina</i>	Lesser Sea-spurrey	r	
<i>Stellaria media</i>	Common Chickweed	r	
<i>Taraxacum</i> sect. <i>Ruderalia</i>	Dandelion	f	
<i>Tragopogon pratensis</i>	Goat's-beard	r	
<i>Trifolium arvense</i>	Hare's-foot Clover	lf	
<i>Trifolium dubium</i>	Lesser Trefoil	o	
<i>Trifolium pratense</i>	Red Clover	o	
<i>Trifolium repens</i>	White Clover	la	
<i>Triglochin palustre</i>	Marsh Arrow-grass	r	SCI
<i>Tripleurospermum maritimum</i>	Sea Mayweed	o	
<i>Tussilago farfara</i>	Colt's-foot	o	
<i>Ulex europaea</i>	Gorse	r	

<i>Urtica dioica</i>	Common Nettle	r	
<i>Vicia sativa</i>	Common Vetch	o	
<i>Vicia sepium</i>	Bush Vetch	o	

Total 141 taxa ; Aliens = 31 (22%); Nationally Rare (NR) = 1; Nationally Scarce (NS) = 2; Species of Conservation Importance in North West England (SCI) = 6. Total notable = 9 (6%)